IN THE SPECIFICATION:

Please amend the paragraph set forth at Column 6, Lines 56-59 as follows:

A schematic diagram of an ultra fast quenching apparatus is shown in FIG. 1. An enclosed axial reactor chamber 20 includes an inlet at one end (shown [to the left] at its upper end) and an outlet at its remaining end (shown [to the right] at its lower end).

Please amend the paragraph set forth at Column 11, Lines 12-21 (after the first equation) as follows:

P_0, P_1, T_0 and T_0 are initial and final pressures and temperatures of the gas, respectively. γ is the ratio of C_p/C_v where C_p and C_v are the heat capacities at constant pressure and volume, respectively. At 2500 K, γ is 1.66 for Ar, 1.30 for H_2, and 1.11 for C_2H_2. This equation can be used to estimate the temperature drop across the nozzle throat if the initial and final pressures of the gases are known or vice versa. The mass flow rate, m, is related to the cross-sectional area (A*) of the nozzle throat, the velocity (V) and the specific volume (Ω)of the gas at the throat. The specific volume (Ω) is the inverse of gas density at the cross section.

Please amend the paragraph set forth in Column 11, Lines 34 – 40 (after the third equation in the column) as follows:

This equation has been used to guide the design of the nozzle diameters used in the reactors built to date. Despite the assumption for a constant value of γ (which is valid for an argon plasma), the equation has been quite accurate in predictions of mass flow as a function of temperature, pressure, molecular weight, and nozzle diameter compared to experimental results.

Please amend the paragraph set forth in Column 11, Lines 56-59 (between the seventh and eighth equations in the column) as follows:

In the last equation above, A* is the cross-sectional area at the throat of the nozzle, and A is the cross-sectional area of the converging-diverging section at a longitudinally distant location from the throat along the reactor axis. Substituting T_0/T into the equation, it becomes

Please amend the paragraph set forth in column 13, lines 33-39 as set forth below:

The plasma reduction is based on a quasi equilibrium-temperature quench sequence in which the initiation of nucleation is controlled by passage of a heated gaseous stream through a converging-diverging nozzle geometry. Results from present system tests have shown the feasibility of the process. The powder product is extremely fine ([[-20]] e.g., 20 nm).

Please amend the paragraph set forth at Column 24, Lines 28-39 as follows:

In addition to mass flow and nozzle diameter, the third process parameter that determines the temperature drop across the nozzle is the ratio of the up stream pressure (P_0, in reaction zone) to the downstream pressure (P_1, cool down zone). In bench scale tests for the production of titanium metal powder and other materials, the ratio [P_0/P_1] P_1/P_0 of 0.01 to 0.26 was maintained. The experimental systems were operated with the reaction zone pressure of approximately 700 to 800 Torr (ca. 1 atm.) and downstream pressure maintained between 10 and 200 Torr (0.26 to 0.01 atm.). In bench scale experiments, the low downstream pressure was accomplished using a mechanical vacuum pump.

Please amend the paragraph bridging Columns 25 and 26 as follows:

FIG. 8 shows a reaction chamber 20 having a virtual convergent-divergent nozzle. The chamber 20 has a plasma gas 31, plasma arc 21, and resulting plasma similar to FIG. 1. Supply inlets 23 focus the incoming reactant streams 32 so as force the reactants toward the center of the

reaction chamber 20. The plasma gas 31 and reactant streams 32 as they come together produce an expansion of the reactant stream toward the outlet end of reaction chamber [23] <u>20</u> to produce flow lines 34 with flow [impedence] <u>impedance</u> 35. This expansion results in rapid cooling of the reactants. Supply inlets 25 allow reactant streams 33 containing for example a reducing gas, such as hydrogen, to prevent back reactions and enhance the virtual nozzle effect and the production of the desired product.